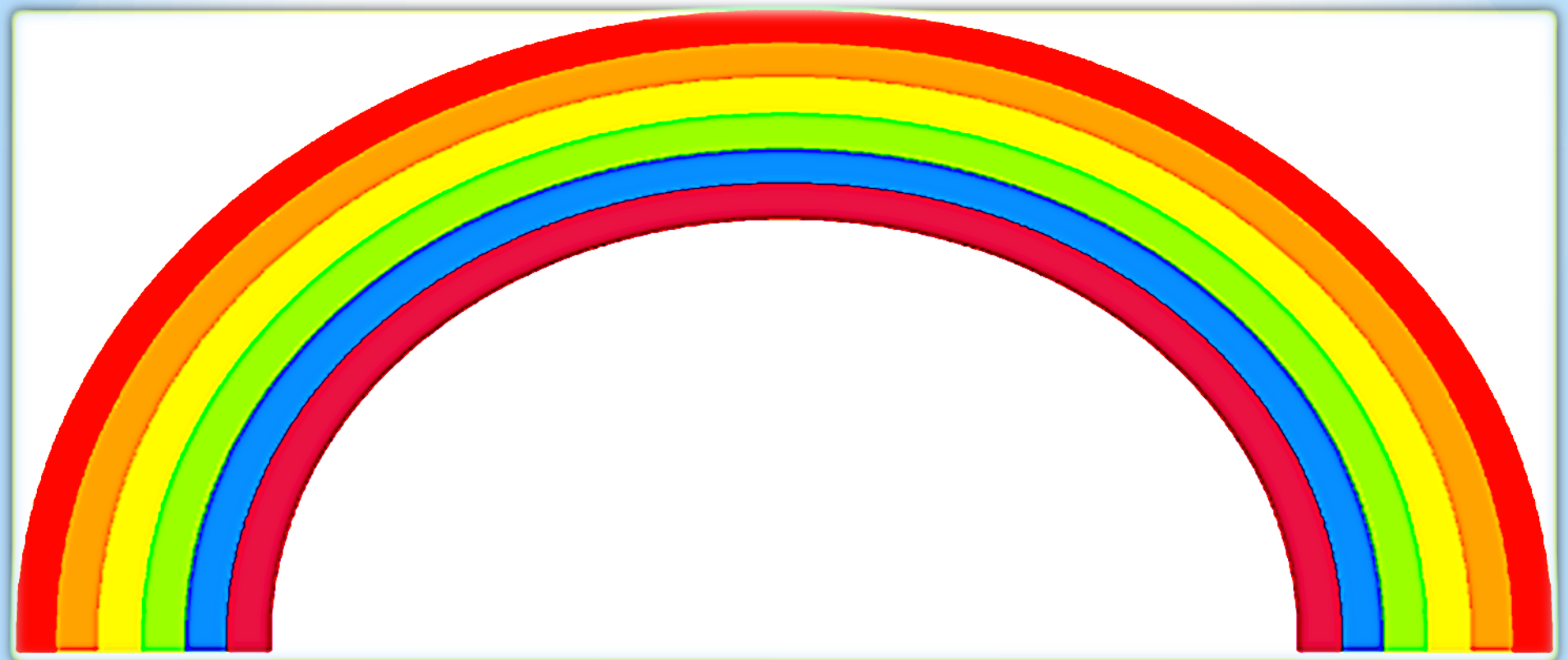
TASTE THE RAINBOW

Minute To Win It Challenge



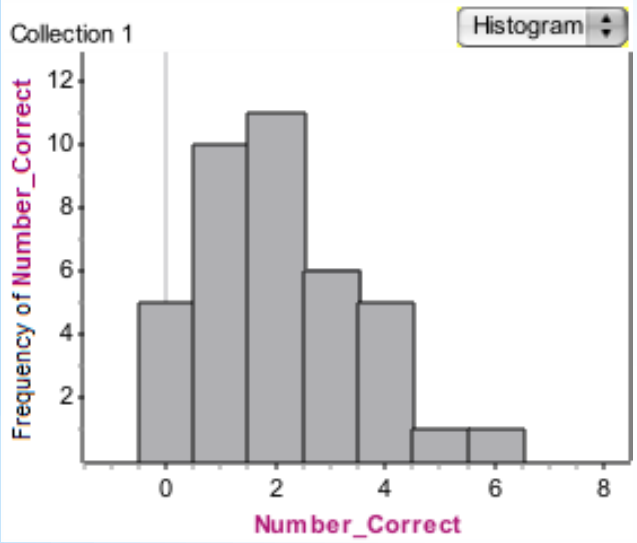
Introduction & Thoughts Behind The Experiment

- Introduction
- What was measured
- Why were these chosen
- What you plan to do with the data

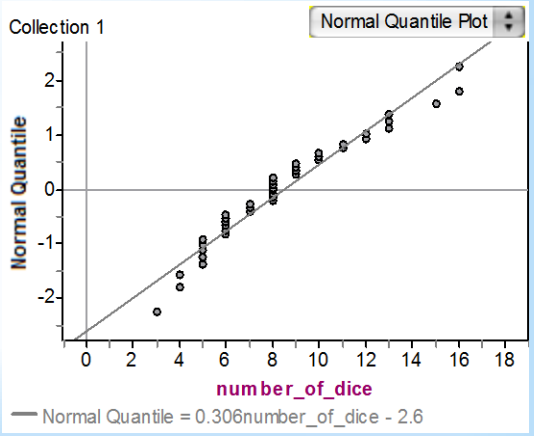
The Task

- More detail about the investigation
- How it was done
- What the subjects had to do
- What else was measured

*Overall Quantitative Data



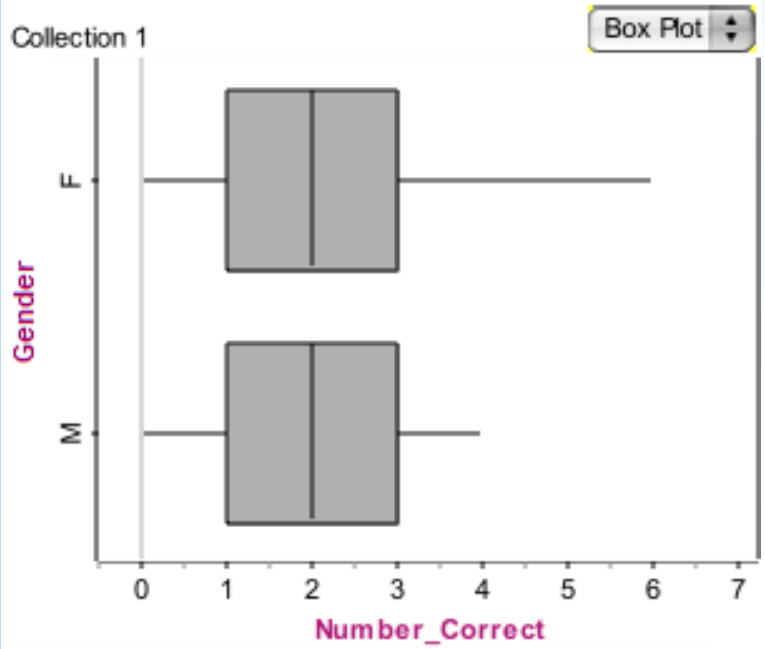
- Summary Stats (in table format)
  Mean, s, min, Q1, Med, Q3, Max, count, IQR
- Outlier test with work shown
- Description
  (shape, center, spread, anything unusual)
- Comparison to normality
  (use normal probability plot)

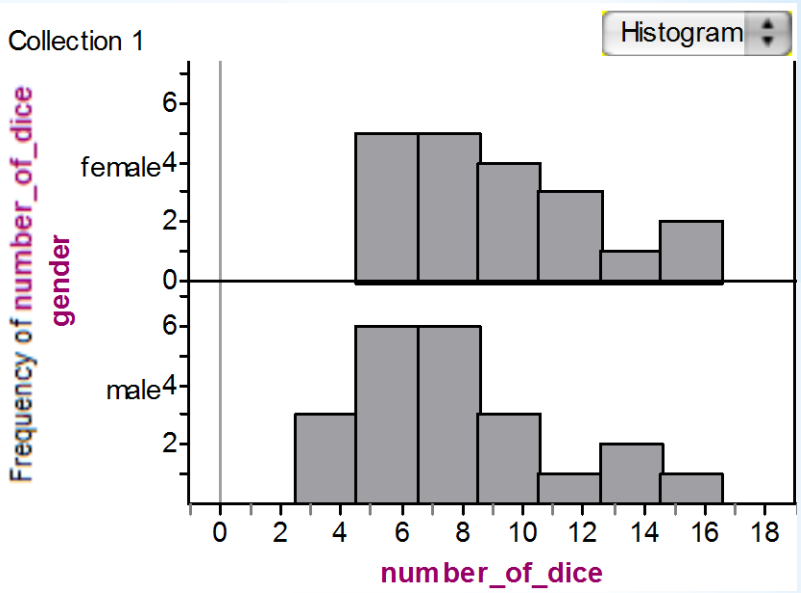


1 sample T Interval (95%) on the true average # of skittles

- Conditions
- Statement
- df
- Formula
- Interval (a, b)
- Conclusion

*Quantitative Data by Gender





- Summary Stats (in table format) for each gender
- Outlier test (with work shown) for each gender
- Describe & Compare

2 sample t test on male vs. female average quantitative variable

- Conditions
- Statement
- Hypotheses: Ho: $\mu F = \mu M$ Ha: $\mu F \neq \mu M$
- Test statistic
- df
- P-value
- Conclusion
- If reject, complete an appropriate confidence interval

Quantitative Data by 2 value Categorical variable

- Same analysis as gender
- See slide 6 for example

2 sample t test on difference of means for 2 value variable

- Conditions
- Statement
- Hypotheses
- Test statistic
- P-value
- df
- Conclusion
- If reject, complete a confidence interval

Categorical Analysis of 2 Value Variable

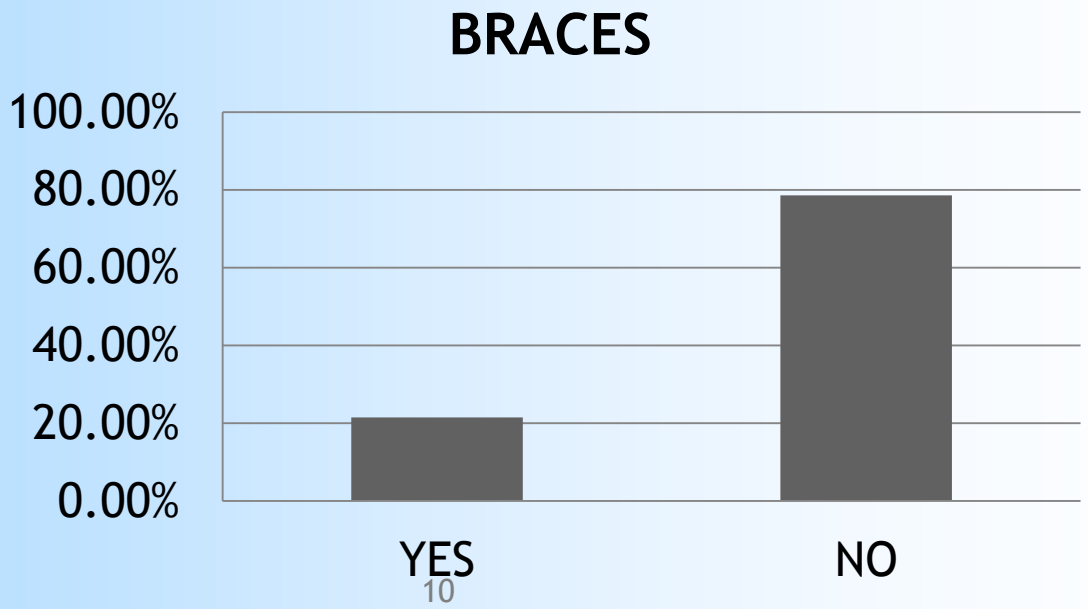
One-Way Table in counts

BRACES		
YES	NO	TOTAL
9	33	42

One-Way Table in Percents

BRACES		
YES	NO	TOTAL
21.43%	78.57%	100.00%

Bar Chart



1 proportion z-Interval

(for the percent of one of your categorical variable values)

p-hat = percent of students who have value A = x/n

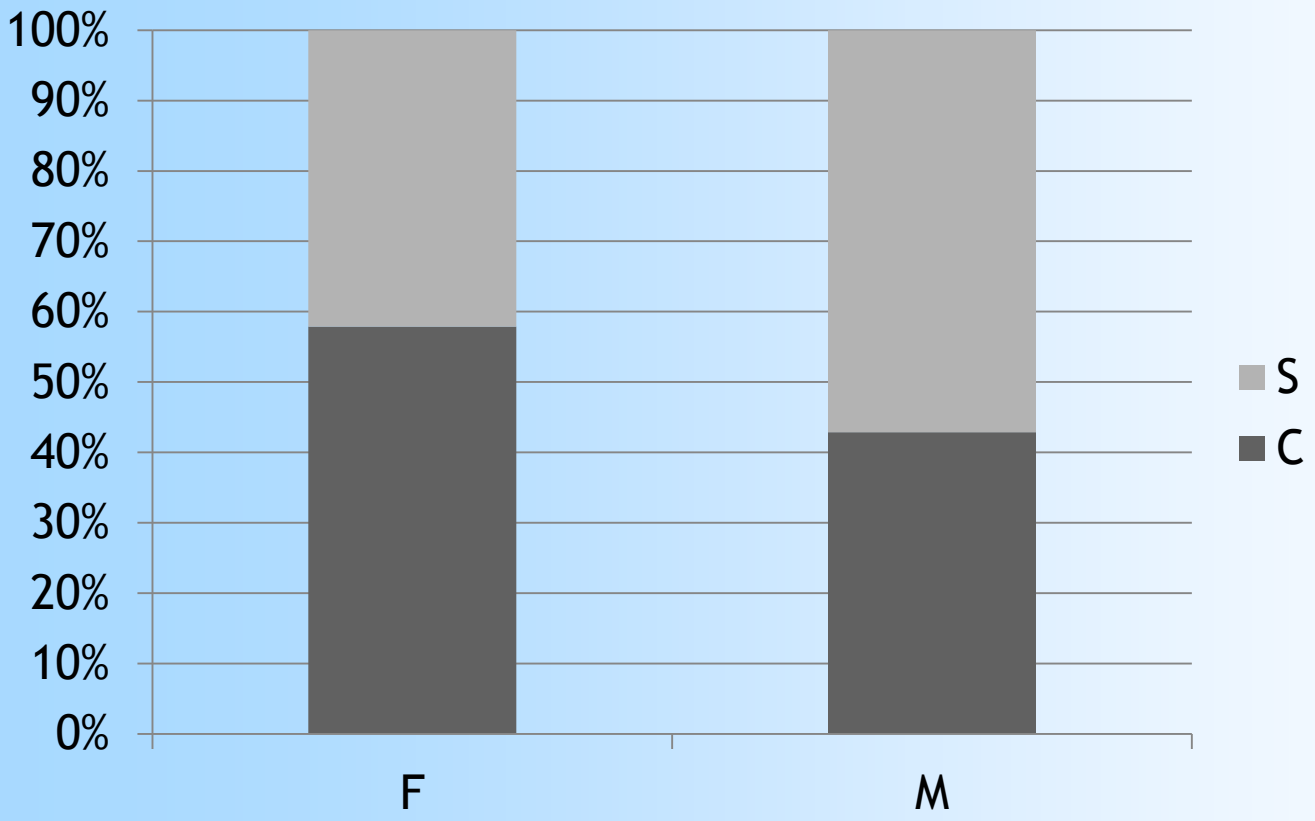
- Conditions
- Statement
- Formula
- Interval (a, b)
- Conclusion

*Simple Two-Way Table of Categorical Data

GENDER		BRACES		
		Y	N	total
	F	5	15	20
	M	4	18	22
	total	9	33	42

*SEGMENTED BAR GRAPH

	C	S
F	57.89%	42.11%
M	42.86%	57.14%



List the % in each category:

Of the females:
C = 57.89%
S = 42.11%

Of the males:
C = 42.86%
S = 57.14%

Using this chart- are the two variables independent? Justify!

Categorical Analysis of 2+ Value Variable

One-Way Table in counts

One-Way Table in Percents

See slide #10 as example

Bar Chart

X^2 GOF test

Example: Frequency of Candy Consumption

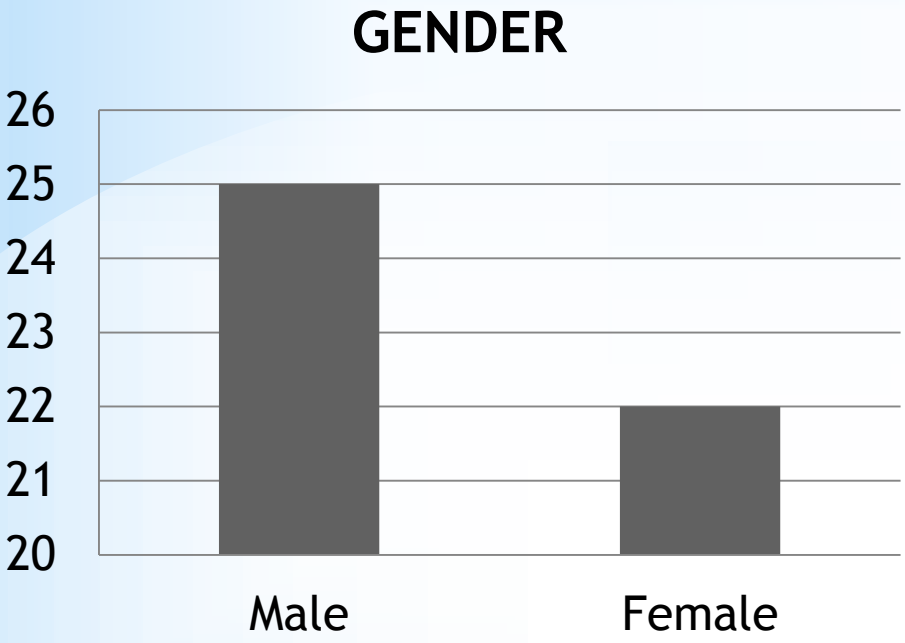
	Candy Consumption		
	Never	Sometimes	Frequently
Observed	10	28	30
Expected	22.667	22.667	22.667

- Conditions
- Statement
- Hypotheses
- Test Statistic
- P-Value (df)
- Conclusion

NOTE:

It might be necessary to combine values to be sure to meet all conditions. See me if you need help with this

*Marginal Distribution for Gender



Counts:

Male = 25

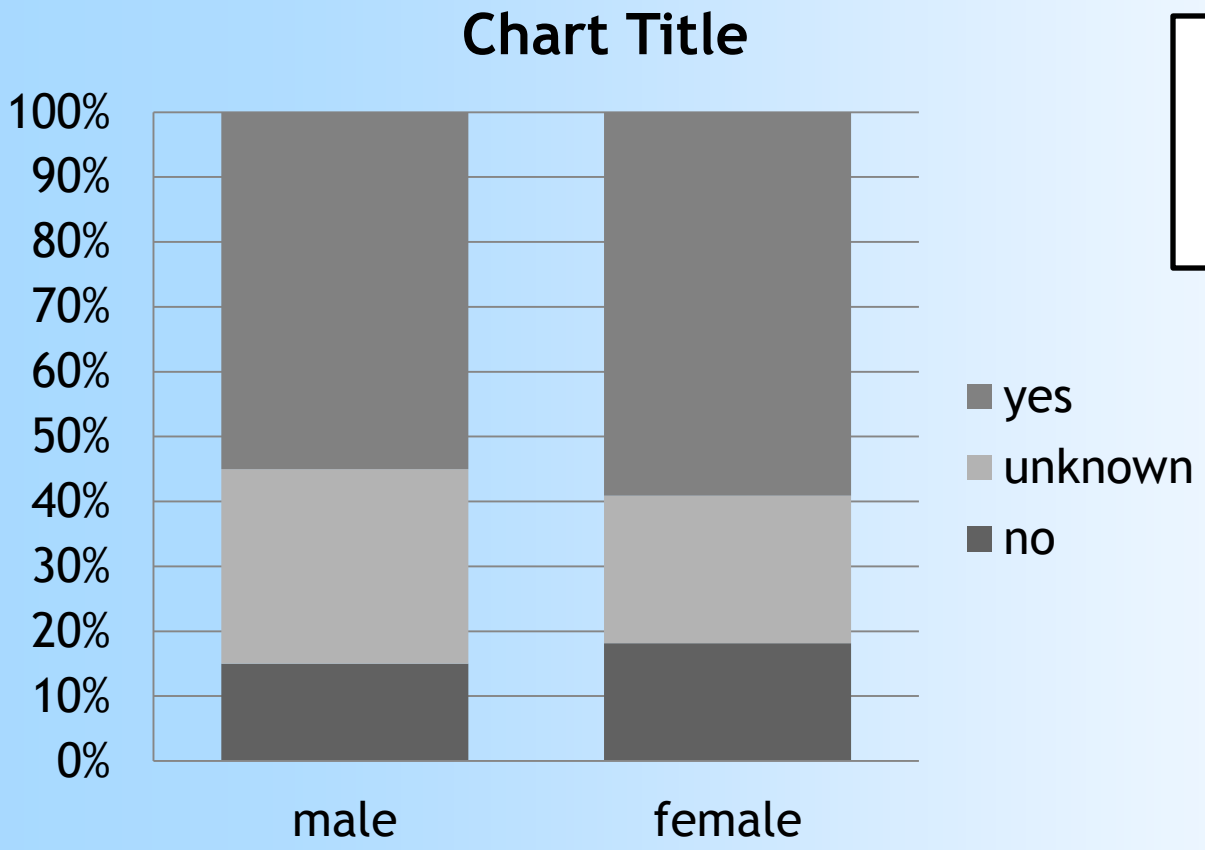
Female = 22

Percentages:

Male: 52.5 %

Female: 47.5%

	no	unknown	yes	total
male	3	6	11	20
female	4	5	13	22
total	7	11	24	42



Include percentages of each segment

*X2 Test for Association – Gender vs. 2+ Value Variable

*Observed Table:

(made in Excel & copied in)

Expected Table

(made in Excel & copied in)

*Conditions
*Statement
*Hypotheses
*Test Statistic
*P-value (df)
*Conclusion

Sources of Error and Bias

*Conclusion

* Make a conclusion about each of the tests/intervals you did

* Make a conclusion about each graph you made

*EXTRA CREDIT:

2 prop Z test

- Take one of your categorical variables and break it down by gender (can be the same one you did before)

- Test to see if the % of males in one value is equal to (or different than) the females in that value

- Example:

$\hat{p}_{M\ glasses} = \frac{12}{30}\ \hat{p}_{F\ glasses} = \frac{18}{41}$

Ho: pM = pF

		EYEWEAR		
		Glasses/Contacts	None	total
GENDER	M	12	18	30
	F	18	23	41
	total	30	41	71